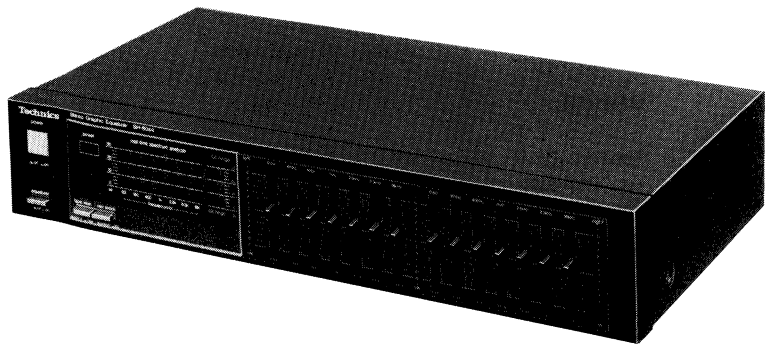
ORDER NO. HAD84072850A2

Service Manual

Equalizer

Stereo Graphic Equalizer SH-8044



Color

(K) ···· Black Type
(S) ····· Silver Type

Color	Area
(K) (S)	[E] ····· Scandinavia, Switzerland
(K) (S)	[EH] ···· Holland
(K) (S)	[EB] ···· Belgium
(K) (S)	[EF] ···· France
(K) (S)	[EK] ···· United Kingdom
(K) (S)	[EGA] ··· F.R. Germany
(K) (S)	[Ei] ····· Italy
(K) (S)	[PA] ···· Far East PX
(K) (S)	[PE] ···· European Military
(K) (S)	[XL] ···· Australia
(K) (S)	[XA] ···· Asia, Latin America, Middle Near East, Africa & Oceania
(K) (S)	[NX] ···· Tourist in Japan

Please use this manual together with the service manual for Model No. SH-8044, Order No. HAD84072836C1.

SPECIFICATIONS

(DIN 45 500)

Frequency response (center position)	: 5 Hz~100 kHz, −1 dB
Maximum output voltage	: 8 V (1 kHz, THD 0.01%)
Rated output voltage	: 1 V
Rated total harmonic distortion	: 0.005% (20 Hz~20 kHz) 0.003% (1 kHz)
Input sensitivity	: 1 V
Signal-to-noise ratio	: 100 dB (110 dB, IHF' A)
Maximum input voltage	: 8 V (1 kHz)
Input impedance	: 33 kΩ
Gain	: 0±1 dB
Channel balance 250 Hz~6300 Hz	: ±0.5 dB
Channel separation 1 kHz	: 70 dB
Band level controls	: +12 dB~−12 dB (7 elements continuously variable per channel)
Center frequency	: 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2.5 kHz, 6.3 kHz, 16 kHz

GENERAL

Power supply	: AC 50 Hz/60 Hz, 240 V (For United Kingdom and Australia) AC 50 Hz/60 Hz, 220 V (For continental Europe) AC 50 Hz/60 Hz, 110 V/120V/220V/240V (For other areas)
Power consumption	: 18 W
Dimensions (H×W×D)	: 86×430×234 mm, (3-3/8"×16-15/16"×9-7/32")
Weight	: 2.8 kg (6.2 lb)

Specifications are subject to change without notice for further improvement.

Technics

Panasonic Tokyo
Matsushita Electric Industrial Co., Ltd.
1-2, 1-chome, Shiba-koen, Minato-ku, Tokyo 105 Japan

Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

TECHNISCHE DATEN

(DIN 45500)

Frequenzgang (mittelstellung) : 5 Hz~100 kHz, −1 dB
Maximalausgangs-spannung : 8 V (1 kHz, THD 0,01%)
Nennausgangsspannung : 1 V
Nennklirrfaktor : 0,005% (20 Hz~20 kHz)
0,003% (1 kHz)
Eingangsspannung : 1 V
Geräuschabstand : 100 dB (110 dB, IHF, A)
Maximaleingangs-spannung : 8 V (1 kHz)
Eingangsimpedanz : 33 kΩ
Verstärkung : 0±1 dB
Kanalsymmetrie 250 Hz~6300 Hz : ±0,5 dB
Kanaltrennung 1kHz : 70 dB
Frequenzgangregler : +12 dB~−12 dB
(7 Regler, stufenlos verstellbar)
Mittenfrequenzen : 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2,5 kHz, 6,3 kHz, 16 kHz

ALLGEMEINE DATEN

Stromversorgung : Wechselstrom 50 Hz/60 Hz, 220 V
(Für Kontinentaleuropa)
Wechselstrom 50 Hz/60 Hz,
110 V/120 V/220 V/240 V
(Für andere Länder)
Leistungsaufnahme : 18 W
Abmessungen (H×B×T) : 86×430×234 mm
(3⅜"×16 15/16"×9 7/32")
Gewicht : 2,8 kg (6,2 lb.)

Spezifikationen können infolge von Verbesser ungen ohne Ankündigung geändert werden.

CARACTERISTIQUES

(DIN 45 500)

Réponse de fréquence (position centrale) : 5 Hz~100 kHz, −1 dB
Tension de sortie maximale : 8 V (1 kHz, THD 0,01%)
Tension de sortie nominale : 1 V
Distortion harmonique totale : 0,005% (20 Hz~ 20 kHz)
0,003% (1 kHz)
Sensibilité d'entrée : 1 V
Signal/Bruit : 100 dB (110 dB, IHF' A)
Tension d'entrée maximale : 8 V (1 kHz)
Impédance d'entrée : 33 kΩ
Gain : 0±1 dB
Equilibrage de canal 250 Hz~6300 Hz : ±0,5 dB
Séparation de canal 1 kHz : 70 dB
Commandes de niveau de gamme : +12 dB~−12 dB
(7 éléments, continuellement variables)
Fréquences charnières : 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2,5 kHz, 6,3 kHz, 16 kHz

GENERALITES

Alimentation : CA 50 Hz/60 Hz, 220 V
(Pour l'Europe)
CA 50 Hz/60 Hz, 110V/120V/220V/240V
(Autres)
Consommation : 18 W
Dimensions (h×l×pr) mm : 86×430×234 mm
(3-3/8"×16-15/16"×9-7/32")
Poids : 2,8 kg (6,2 lb)

Sujet á changement sans prearis.

ESPECIFICACIONES

(DIN 45 500)

Respuesta de frecuencia (posición central) : 5 Hz~100 kHz, − 1 dB
Tensión de salida máxima : 8 V (1 kHz, THD 0.01%)
Tensión de salida de régimen : 1 V
Distorsión armónica total nominal : 0,005% (20 Hz~20 kHz)
0,003% (1 kHz)
Sensibilidad de entrada : 1 V
Relación de señal ruido : 100 dB (110 dB, IHF' A)
Tensión de entrada máxima : 8 V (1 kHz)
Impedancia de entrada : 33 kΩ
Ganancia : 0±1 dB
Equilibrio de canales 250 Hz~6300 Hz : ±0,5 dB
Separación de canales 1 kHz : 70 dB
Controles de nivel de banda : +12 dB~−12 dB
(7 elementos, continuamente variables)
Frecuencia central : 63 Hz, 160 Hz, 400 Hz, 1 kHz, 2,5 kHz, 6,3 kHz, 16 kHz

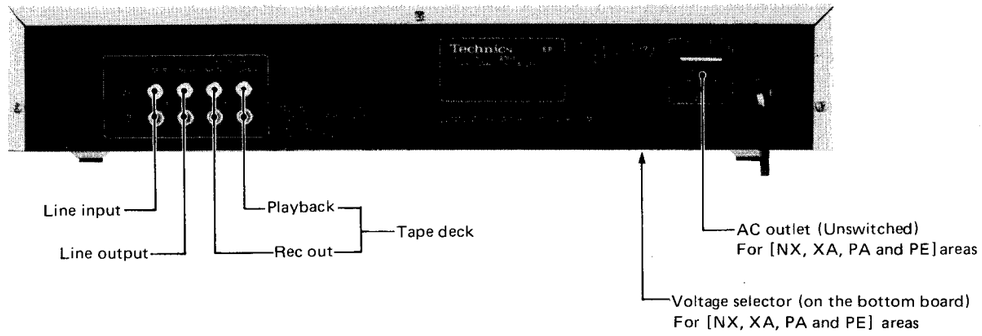
EN GENERAL

Alimentación de corriente : CA 50 Hz/60 Hz, 220 V
(Para Europa continental)
CA 50 Hz/60 Hz, 110V/120V/220V/240V
(Para otros paises)
Consumo de corriente : 18 W
Dimensiones (alto×ancho×prof.) : 86×430×234 mm
(3-3/8"×16-15/16"×9-7/32")
Peso : 2,8 kg (6,2 lb)

Estas especificaciones están sujetas a cualquier cambio sin previo eviso.

■ LOCATION OF CONTROLS

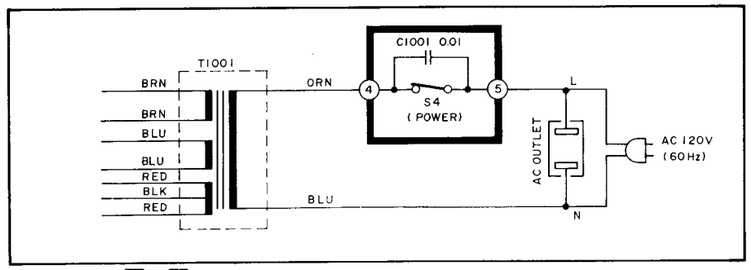
- Rear panel



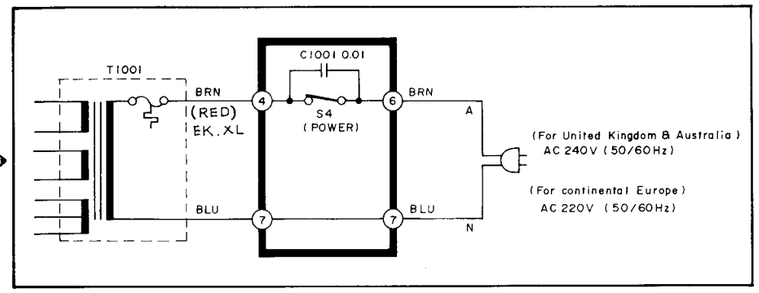
■ CHANGE IN SCHEMATIC DIAGRAM

- Power source circuit

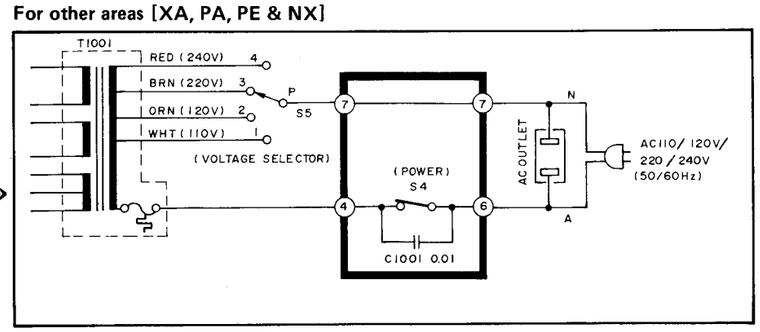
For the U.S.A. [M]



For continantal Europe, United Kingdom [EK] and Australia [XL].



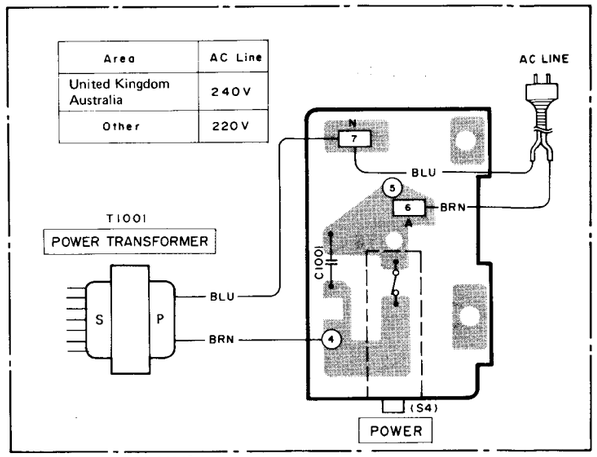
For other areas [XA, PA, PE & NX]



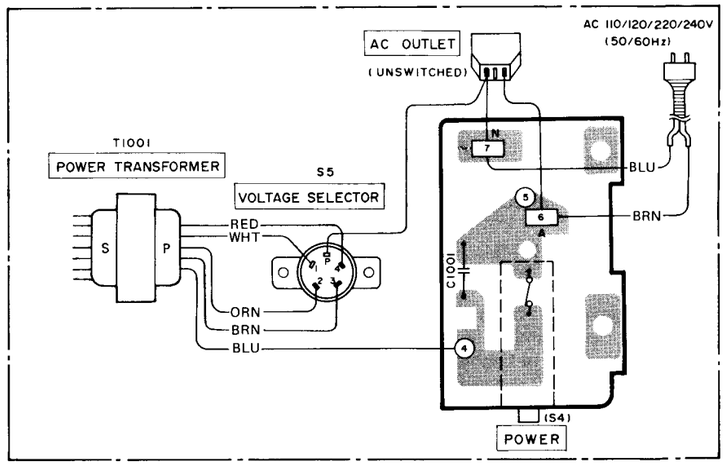
■ PRINTED CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM

- Power source circuit

For continantal Europe, United Kingdom [EK] and Australi [XL]



For other areas [XA, PA, PE & NX]



■ CHANGE IN REPLACEMENT PARTS LIST

Note: 1. Mentioned in this parts list are only those changed in Model No. SH-8044 for destination[M] area.
2. Ⓚ – marked parts are used for black only, while ◯– marked parts are for silver type only.
3. Part other than Ⓚ – and ◯– marked are used for both black and silver type.
4. Bracketed indications in Ref. No. Columns specify the area. Parts without these indications can be used for all areas.

Ref. No.	Change of Part No.		Description		
	SH-8044 [M]	**SH-8044 Europe, Other**	Color	Area	
SWITCH					
S5	Addition	ESE3787		[NX, XA, PA & PE] only	Voltage Selector
TRANSFORMER					
T1001	SLTK5J24–W	SLTK5J25–W		[NX, XA, PA & PE]	Power Transformer
		SLTK5J27–W		[XL & EK]	
		SLTK5J26–W		[Other] area	
RESISTORS					
R73 ~ R76	Addition	ERD10TJ102		[EGA] only	1kΩ, 1/8W, Carbon

Ref. No.	Change of Part No. SH-8044 [M] Color	→ SH-8044 Europe, Other	Description Color	Area	
CAPACITORS					
C67 ~ C70	Addition	ECCD1H151K		[EGA] only	150pF, 50V, Ceramic
C71, 72	Addition	ECKD1H331KB		[EGA] only	330pF, 50V, Ceramic
C73, 74	Addition	ECKD1H223ZF		[EGA] only	0.022μF, 50V, Ceramic
CABINET and CHASSIS PARTS					
5	SBWK22 ○	SBWK22			Button, Volume (Use for both black and silver types)
	SBWK23 Ⓚ				
6	SGXK94	SGXK93			Cloth, Light Shielding
7	SGXK91-2 ○	SGXK91-1	○		Sub Panel
	SGXK91 Ⓚ	SGXK91	Ⓚ		
16	RHR111	SHR129		[EK] only	Bushing, AC Cord
		SHR127		[Other] area	
17	SJS9221-1	SJS9221-1		[NX, XA, PA &PE] only	Socket, AC Outlet
		Deletion		[Other]	
18	RJA9YA	QFC1205M		[EK]	AC Cord, Power Source
		QFC1208M		[XL]	
		RJA52YA		[PA, PE]	
		SJA138-3		[Other]	
20	SGPKH8044M	SGPKH8044X		[NX, XA, PA & PE]	Rear Panel, (w/Feet)
		SGPKH8044E		[E]	
		SGPKH8044K		[EK]	
		SGPKH8044L		[XL]	
		SGPKH8044G		[Other]	
SCREW					
N13	Addition	XTB3+8BFN		[NX, XA, PA &PE] only	Voltage Selector M'tg.
ACCESSORIES					
A2	SQFK10071	SQFK10074		[EGA]	Instruction Book
		SQFK10075		[Ei]	
		SQFK10076		[PA, PE]	
		SQFK10073		[Other]	
A3	Addition	SJP9215		[PA, PE] only	Plug Adaptor, AC (U→B), (U→C)
A4	Addition	SJP5213-1		[XA, NX] only	Plug Adaptor, AC (C→U)
PACKING PARTS					
P1	SPGK137	SPGK138	○	[EK] only	Carton Box, Silver Type
		SPGK137	○	[Other] area	
P1	SPGK140	SPGK142	Ⓚ	[EK]	Carton Box, Black Type
		SPGK139	Ⓚ	[EF]	
		SPGK140	Ⓚ	[Other] area	

■ REPLACEMENT PARTS LIST

Notes: 1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. Ⓚ –marked parts are used for black only, while ○ –marked parts are for silver type only.
4. Part other than Ⓚ – and ○–marked are used for both black and silver type.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. The "Ⓢ"mark is service standard parts and may differ from production parts.
7. The parenthesized numbers in the column of description stand for the quantity per set.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC1,2,502~506	SVITA75559S	Control Amp., Buffer & Spectrum Analyzer B.P.F.
IC501	AN78N12	12V Regulator
IC507	M54832AP	Channel Selector
IC508	SVIHA12010	FL Driver
TRANSISTORS		
Q1	2SD1406-Y	Regulator
Q2	2SB1015-Y	Regulator
Q3	2SC1815-G	Muting
Q4,509,511~518	2SA1015Y	Muting, Buffer & Inverter
Q5,6,510	2SC2878A-T	Muting
Q501~508	2SA1246T-A	Sampling Gate
Q519~530	UN4115	Buffer
DIODES		
D1,2	MA4150H	15V Zener
D3 ⚠	SVD1B4B42	Rectifier

Ref. No.	Part No.	Part Name & Description
DIODES		
D5	MA167	Rectifier
D6~9,501~508 513	SVD1SS119-04	Switching & Detector
D101~114	LN251RCPP	LED, Volume
D509,510 ⚠	SVD1SR35200	Rectifier
D511 Ⓢ	20A90	Bias
D512	MA4120H	12V Zener
D514	LN81CPH	LED, Power
VARIABLE RESISTORS		
VR1~14	EVAJN3J15G25	Band Level Control, 200kΩ(G)
FLUORESCENT DISPLAY TUBE		
FL	SADBG239ZK	Display
COMPONENT COMBINATIONS		
Z1	RGSD7X104K	100kΩ(×7)
Z2	RGSD8X104K	100kΩ(×8)
Z3	PJB7XC331M	330pF(×7)

Ref. No.	Part No.	Part Name & Description
COMPONENT COMBINATIONS		
Z4	RGSD8X472X	4.7kΩ(×8)
Z5	RGHD12X562K	1/4W, 5.6kΩ(×12)
SWITCHES		
S1,2	SSHK47	Rec mode, Tape Monitor
S3	SSHK46	Equalization
S4 ⚠	SSH1071	Power source
S5(NX,XA,PA, PE) ⚠	ESE3787	Voltage Selector
TRANSFORMER		
T1001(NX,XA, PA,PE) ⚠	SLTK5J25-W	Power Transformer
T1001(XL,EK) ⚠	SLTK5J27-W	Power Transformer
T1001(other) ⚠	SLTK5J26-W	Power Transformer

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
1 ○	SGU419-3	Transparent Plate (1)
1 Ⓚ	SGU419-1	Transparent Plate (1)
2	SGXK92	Grille (1)
3	SDUK11	Filter (1)
4	SDUK12	Sheet, Front Panel (1)
5	SBWK22	Button (14)
6	SGXK93	Cloth, Shielding (1)
7 ○	SGXK91-1	Sub Panel (1)
7 Ⓚ	SGXK91	Sub Panel (1)
8 ○	SGWK280SA	Front Panel (1)
8 Ⓚ	SGWK280BA	Front Panel (1)
9	SHR9728	Holder, FL (2)
10	SBC666	Button, Power SW (1)
11	SUB81	Rod, Connection Power SW (1)
12	SBC315-4T	Button (3)
13	SBZK33	Guide, Light (14)
14 ○	SKCK130S	Cabinet (1)
14 Ⓚ	SKCK130BB	Cabinet (1)
15	SMNK17	Cover, Power SW (1)
16(EK)	SHR129	Bushing, AC Cord (1)
16(other)	SHR127	Bushing, AC Cord (1)
17(NX,XA,PA, PE) ⚠	SJS9221-1	Socket, AC Outlet (1)
18(EK) ⚠	QFC1205M	AC Cord, Power Source (1)
18(XL) ⚠	QFC1208M	AC Cord, Power Source (1)

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
18(PA,PE) ⚠	RJA52YA	AC Cord, Power Source (1)
18(other) ⚠	SJA138-3	AC Cord, Power Source (1)
19	SJF3055-1N	Terminal Board, In/Out (1)
20(NX,XA,PA, PE)	SGPKH8044X	Rear Panel, (W/Feet) (1)
20(E)	SGPKH8044E	Rear Panel, (W/Feet) (1)
20(EK)	SGPKH8044K	Rear Panel, (W/Feet) (1)
20(XL)	SGPKH8044L	Rear Panel, (W/Feet) (1)
20(other)	SGPKH8044G	Rear Panel, (W/Feet) (1)
(20-1	(SHS2481	Foot (4)
21	SJT783	Terminal (14)
22	SJS5811	Socket (2)
23	SJT3809	Connector (2)
24	SJT5807	Connector (1)
25	SJT3319	Connector, J7 (1)
25	SJT3415	Connector, J8 (1)
25	SJT3511	Connector, J3 (1)
25	SJT3611	Connector, J11,12 (1)
25	SJT3709	Connector, J1,2,10 (3)
25	SJT3809	Connector,J9 (1)
26	SJS5339	Socket, J7 (1)
26	SJS5433	Socket, J8 (1)
26	SJS5531	Socket, J3 (1)
26	SJS5635	Socket, J11,12 (2)
26	SJS5719	Socket, J1,2,10 (3)
SCREWS and WASHERS		
N1 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N2 ○	SNE2095-4	Cabinet (2)
N2 Ⓚ	SNE2095-5	Cabinet (2)

Ref. No.	Part No.	Part Name & Description
SCREWS and WASHERS		
N3 ○Ⓢ	XTB3+8BFN	Tapping, ⊕3×8 (3)
N3 ⓀⓈ	XTB3+8BFZ	Tapping, ⊕3×8 (3)
N4 Ⓢ	XTB3+8BFN	Tapping, ⊕3×8 (2)
N5 Ⓢ	XTB3+6BFN	Tapping, ⊕3×6 (2)
N6	XTBS3+8CFYR1	Tapping, ⊕3×8(W/Detent) (2)
N7 Ⓢ	XSN3+8S	Screw, ⊕3×8 (1)
N7-1 Ⓢ	XWA3B	Washer, Spring φ3 (1)
N7-2 Ⓢ	XWG3	Washer, φ3 (1)
N8 Ⓢ	XTN3+6B	Tapping, ⊕3×6 (2)
N8-1 Ⓢ	XWG3	Washer, φ3 (2)
N9 Ⓢ	XTB3+10BFZ	Tapping, ⊕3×10 (2)
N10 Ⓢ	XWC3B	Stop Ring (2)
N11	XTB3+8BFYR	Tapping, ⊕3×8 (3)
N12 Ⓢ	XTB3+8BFYR	Tapping, ⊕3×8 (3)
N13 Ⓢ	XTB3+8BFN	Tapping, ⊕3×8 (2)
ACCESSORIES		
A1	SJPK2201	Cord, Pin-Pin (2)
A2(EGA)	SQFK10074	Instruction Book (1)
A2(Ei)	SQFK10075	Instruction Book (1)
A2(PA,PE)	SQFK10076	Instruction Book (1)
A2(other)	SQFK10073	Instruction Book (1)
A3(PA,PE)	SJP9215	Plug Adaptor (1)
A4(XA,NX)	SJP5213-1	Plug Adaptor (1)
PACKING PARTS		
P1(EK) ○	SPGK138	Carton Box (1)
P1(other) ○	SPGK137	Carton Box (1)
P1(EK) Ⓚ	SPGK142	Carton Box (1)
P1(EF) Ⓚ	SPGK139	Carton Box (1)
P1(other) Ⓚ	SPGK140	Carton Box (1)
P2	SPSK69	Pad, Front (1)
P3	SPSK70	Pad, Rear (1)
P4	SPSK74	Pad, Upper (1)
P5 ○	SPP719	Polyethylene Sheet (1)
P5 Ⓚ	SPP659	Polyethylene Sheet (1)

Printed in Japan
8407Y9480 ®KK/IM

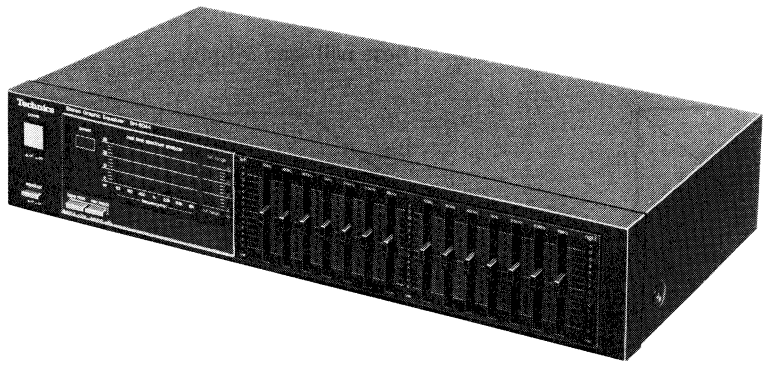
ORDER NO. HAD8407283 6C1

Service Manual

Equalizer

SH-8044

Stereo Graphic Equalizer
(With Spectrum Analyzer)



Color

(S) · · · · Silver Type
(K) · · · · Black Type

Color	Area
(S),(K)	[M] · · · · U.S.A.
(K)	[MC] · · · Canada

- **System (U.S.A.)**
  SC-7170E

SPECIFICATIONS

(IHF '78)

Center Frequency:	63Hz, 160Hz, 400Hz, 1kHz, 2.5kHz, 6.3kHz and 16kHz
Frequency Response: (center position)	5Hz ~ 100kHz (–1dB)
Band Level Controls:	+12dB ~ –12dB (7 continuously variable elements per channel)
Rated Total Harmonic Distortion:	0.005% (20Hz ~ 20kHz) 0.003% (1kHz)
Input Impedance:	33k ohms
Rated Output Voltage:	1V
Maximum Output Voltage:	8V (1kHz, THD 0.01%)
Input Sensitivity:	1V
Signal to Noise Ratio:	110dB (IHF'A)
Maximum Input Voltage:	8V (1kHz)
Gain:	0 ± 1dB

■ General

Power Supply:	120V AC, 60Hz
Power Consumption:	20 W
Weight:	6.2 lb (2.8 kg)
Dimensions:	Width; 16-15/16" (430mm) Height; 3-3/8" (86mm) Depth; 9-7/32" (234mm)

Specifications are subject to change without notice for further improvement.
Weights and dimensions shown are approximate.

Technics

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Carolina, Puerto Rico 00630

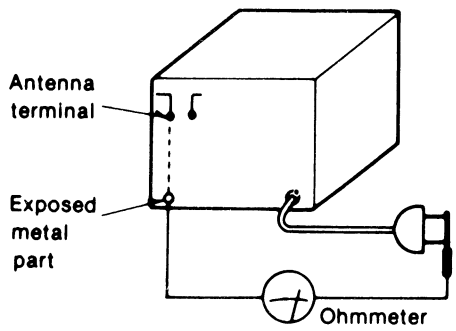
■ SAFETY PRECAUTION

1. Before servicing, unplug the power cord to prevent an electric shock.
2. When replacing parts, use only manufacturer's recommended components for safety.
3. Check the condition of the power cord. Replace if wear or damage is evident.
4. After servicing, be sure to restore the lead dress, insulation barriers, insulation papers, shields, etc.
5. Before returning the serviced equipment to the customer, be sure to make the following insulation resistance test to prevent the customer from being exposed to a shock hazard.

• INSULATION RESISTANCE TEST

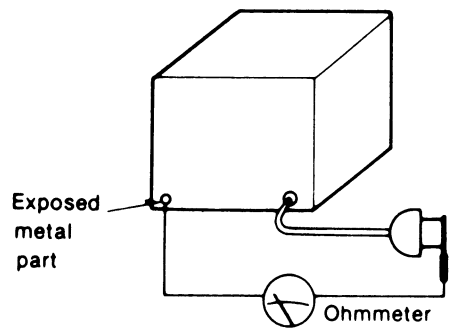
1. Unplug the power cord and short the two prongs of the plug with a jumper wire.
2. Turn on the power switch.
3. Measure the resistance value with ohmmeter between the jumpered AC plug and each exposed metal cabinet part, such as screwheads antenna, control shafts, handle brackets, etc. Equipment with antenna terminals should read between 3MΩ and 5.2MΩ to all exposed parts. (Fig. A) Equipment without antenna terminals should read approximately infinity to all exposed parts. (Fig. B)

Note: Some exposed parts may be isolated from the chassis by design. These will read infinity.



(Fig. A)

Resistance = 3MΩ—5.2MΩ



(Fig. B)

Resistance = Approx ∞

4. If the measurement is outside the specified limits, there is a possibility of a shock hazard. The equipment should be repaired and rechecked before it is returned to the customer.

■ CONTENTS

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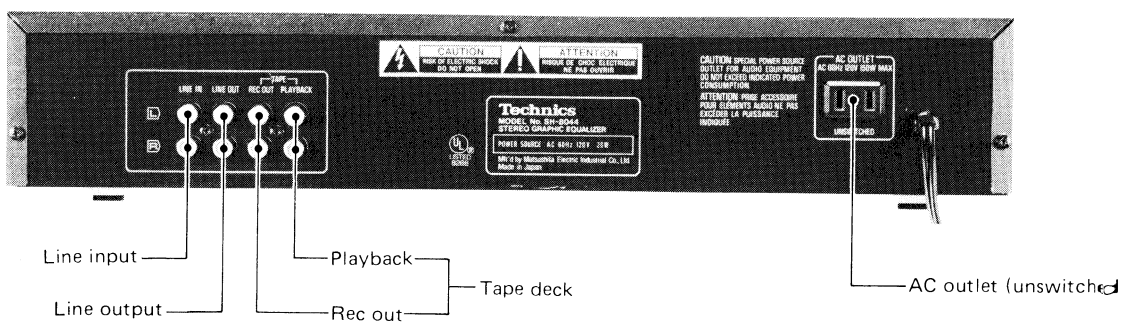
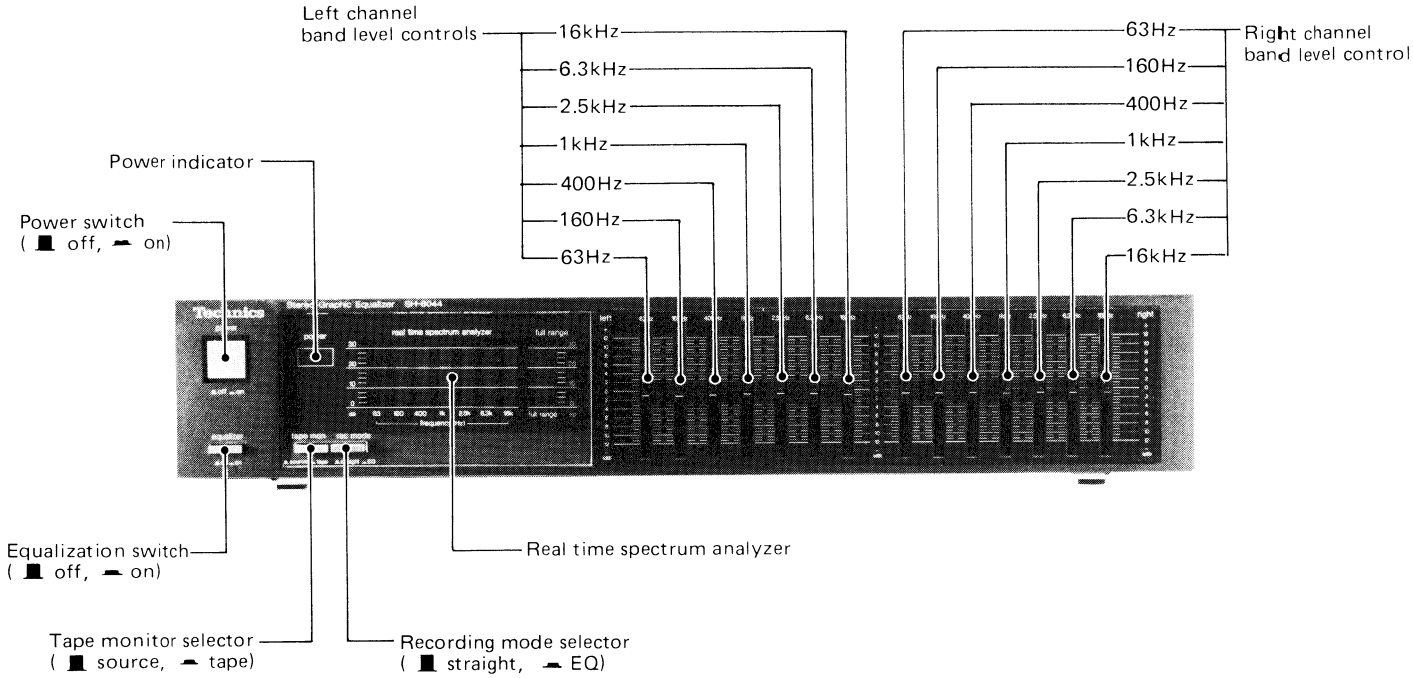
■ LOCATION OF CONTROLS

• Rear panel



• Front panel



• Power switch
This switch is used to turn the power on and off.

• Power indicator
This indicator will illuminate when the power switch is turned on.

• Real time spectrum analyzer
- The same 7-band frequency divider as for the band level controls allows the levels of the frequency components of voices, music, etc., to be visually displayed.
- The "full range" area on the right side displays the combined level of all of the frequency bands.

(The indication is the combined value of the left and right input signals.)

• Band-level controls
These controls are used to adjust the 7 frequency levels. When these levers are moved in the "+ dB" direction, peak frequency characteristics are obtained. When they are moved in the "– dB" direction, dip frequency characteristics are obtained. These characteristics can be adjusted a maximum of ±12 dB.

• Equalization switch
This switch is used to turn the equalization circuitry on and off.

on (⇨):
Set to this position for equalizer correction.

off (⇨):
Set to this position to turn off equalizer correction. By turning this switch on and off, the equalizer effect can also be checked. When this switch is in the "off" position, signals will still pass through the unit and be emitted, regardless of whether the power switch is in the "on" or "off" position.

• Tape-monitor selector
source (⇨):
Set to this position to listen to the radio or a disc.

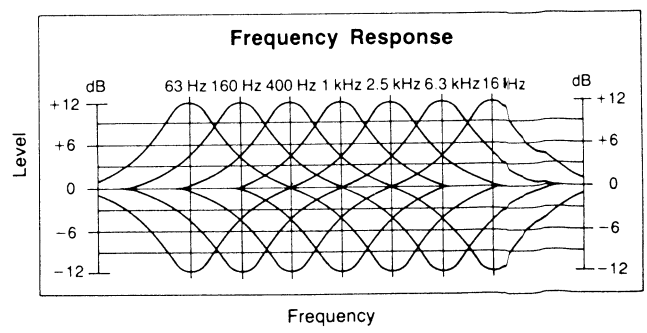
tape (⇨):
Set to this position to listen to a tape deck.

• Recording mode selector
straight (⇨):
Set to this position to record without equalizer correction.

EQ (⇨):
Set to this position to make a tpae recording of a radio broadcast or a disc while controlling the frequency response.

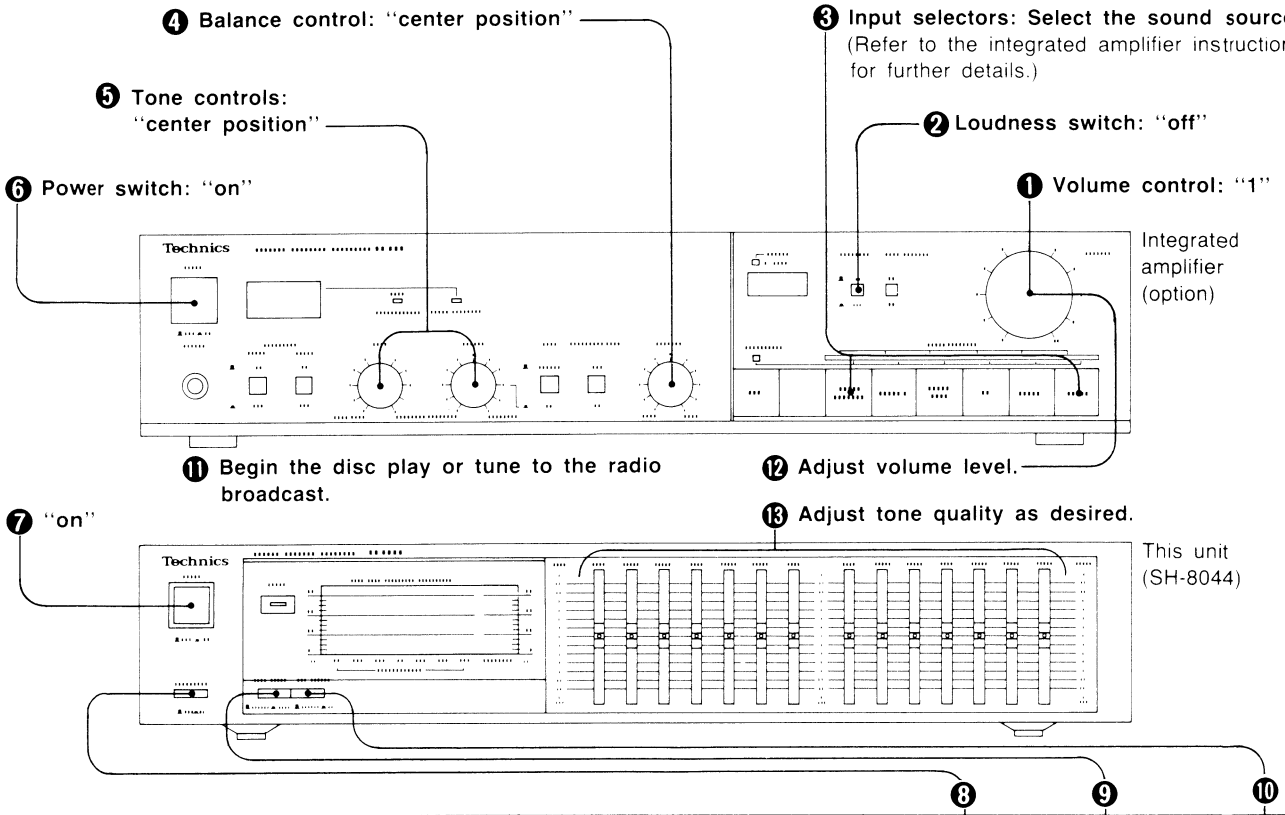
Note:
The equalization switch must be set to the "on" position and then the tape-monitor selector must be set to the "source" position, otherwise the frequency response cannot be controlled.

• Total frequency response



■ OPERATION

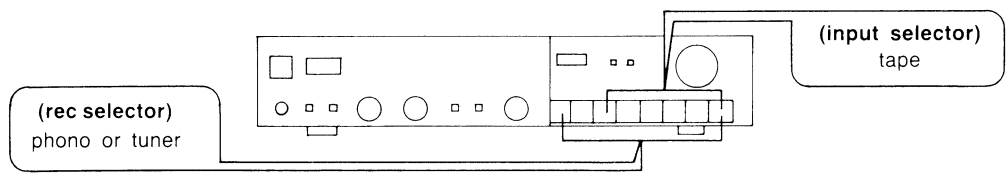
■ Connection of the input/output terminals (LINE OUT/LINE IN) of this unit to the external input/output terminals (EXT OUT/EXT IN) terminals of an integrated amplifier.


❹ Balance control: "center position"
❸ Input selectors: Select the sound source. (Refer to the integrated amplifier instructions for further details.)
❺ Tone controls: "center position"
❷ Loudness switch: "off"
❻ Power switch: "on"
❶ Volume control: "1"
Technics
Integrated amplifier (option)
⓫ Begin the disc play or tune to the radio broadcast.
⓬ Adjust volume level.
❼ "on"
⓭ Adjust tone quality as desired.
Technics
This unit (SH-8044)

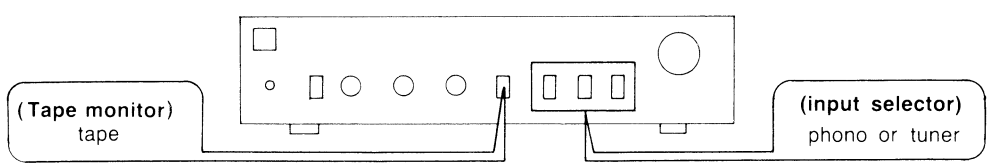
	❽ equalizer	❾ tape mon	❿ rec mode
To listen to corrected sound of phono discs or radio.	"on" (■⇨▮)	"source" (▮⇨■)	Set to any position
To record corrected sound of phono discs or from radio.			"EQ" (■⇨▮)
To record the uncorrected sound of phono discs or from the radio.			"straight" (▮⇨■)
To listen to corrected sound from a tape deck.		"tape" (■⇨▮)	Set to any position
Press the equalization switch (equalizer) in to the "off" (▮⇨■) position to listen to uncorrected sound, or when recording.			

■ Connection of the input/output (LINE OUT/LINE IN) terminals of this unit to the tape input/output terminals (PLAYBACK/REC OUT) of an amplifier (amplifier operation changes from that shown in the figure above to that described below).

•If the amplifier has a recording mode selector and an input selector. (Make setting as shown in the figure.)



•If the amplifier has a tape-monitor selector and an input selector: (Make setting as shown in the figure.)

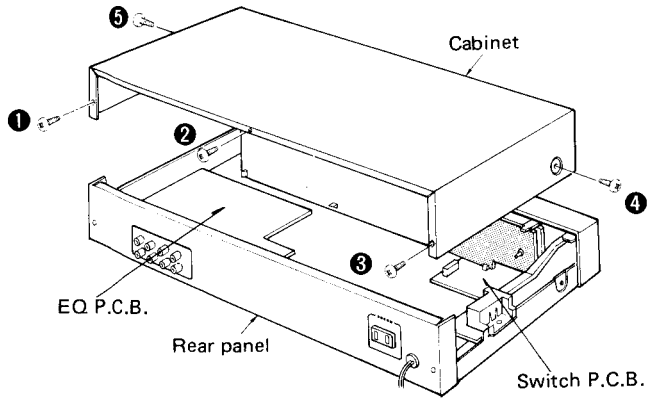


■ DISASSEMBLY INSTRUCTIONS

Ref. No. 1	How to remove the cabinet.

Procedure 1

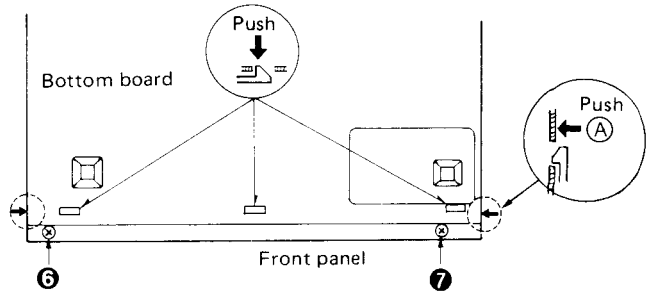
- Remove the 5 screws. (❶ ~ ❺)



Ref. No. 2	How to remove the front panel.

Procedure 1 → 2

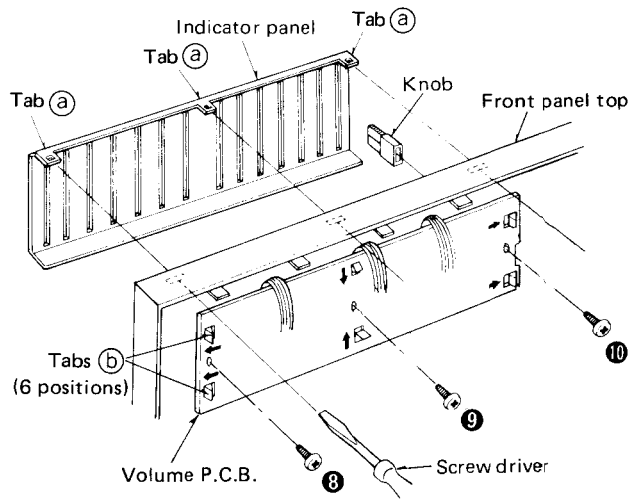
- Pull out the 4 connectors (J1 ~ J3 and J8) from EQ P.C.B.
- Pull out the 2 connectors (J7 and J12) from switch P.C.B.
- Remove the 2 screws. (❻ ~ ❼)
- Push the 2 tabs on the right and left sides of the front panel in the direction of arrow Ⓐ .
- The tabs which project (at positions) from the front panel are engaged with the bottom board.
- Remove the front panel from chassis.



Ref. No. 3	How to remove the band level control volume P.C.B.

Procedure 1 → 2 → 3

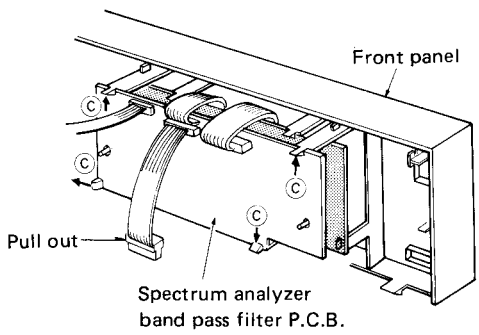
- Move the 3 tabs in. (ⓐ).
- Remove the indicator panel.
- Remove the 14 knobs.
- Remove the 3 screws. (❽ ~ ❿)
- Move the 6 tabs to the side (ⓑ).
- Remove the P.C.B.

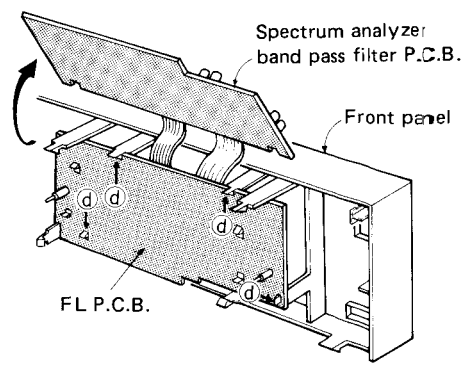


Ref. No. 4	How to remove the FL (display tube) P.C.B.

Procedure 1 → 2 → 4

- Move the 4 tabs aside (ⓒ).
- Remove the band pass filter P.C.B.
- Move the 4 tabs aside (ⓓ).
- Remove the FL P.C.B.





■ TECHNICAL INFORMATION

• Band level control circuit

(for varying the center frequency by ± 12dB)

The euqalizer circuit of this unit is shown in Fig. 1. When the control volume (VR) is turned in the direction of → (+), NF level lowers with the connection shown in Fig. 2, causing the gain of operation amplifier to increase, then the "peak" apperas. Contrarily, when VR is turned in the direction of ← (−), the input impedance of operation amplifier becomes lowered with the connection shown in Fig. 3. Then the frequency level is "dip".

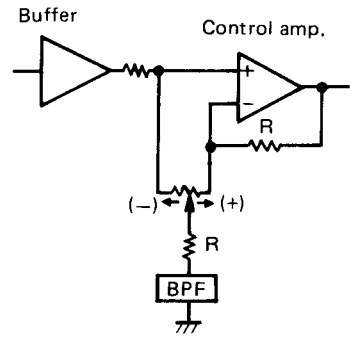


Fig. 1

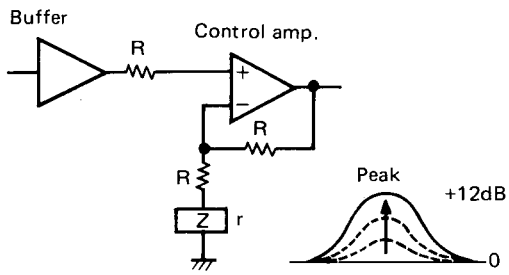


Fig. 2

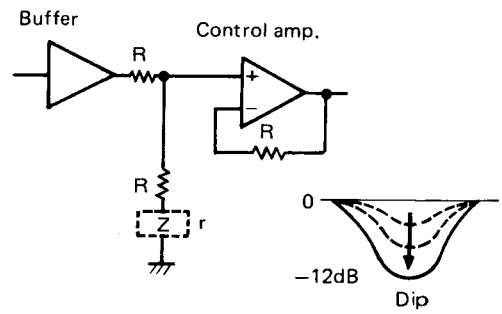
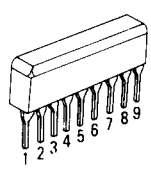
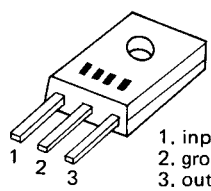
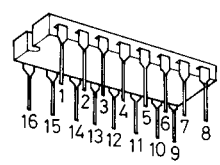
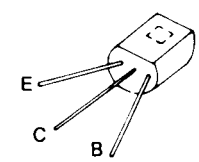
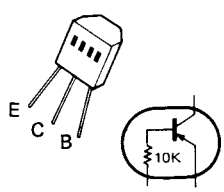
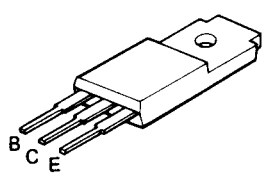
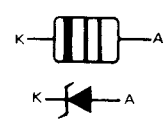
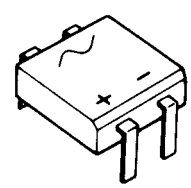
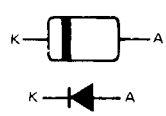
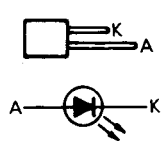
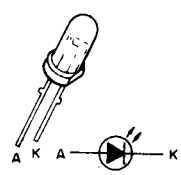
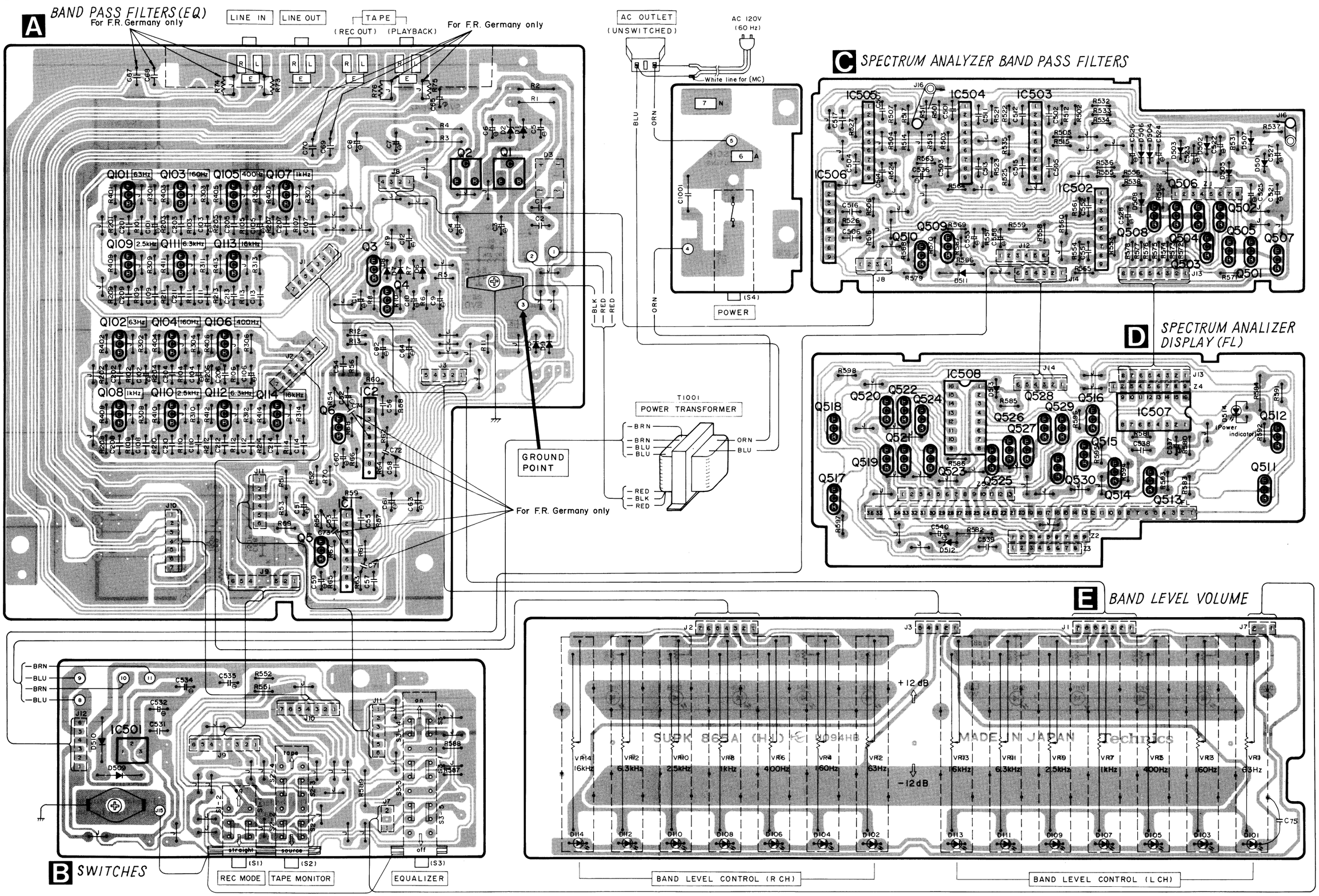


Fig. 3

■ TERMINAL GUIDE OF TRANSISTORS, DIODES AND IC'S

SVITA75559S  	AN78N12  1. input 2. ground 3. output	M54832AP SVIHA12010  	2SA1015, 2SC2878, 2SC1815, 2SA1246 
UN4115  	2SD1406, 2SB1015  	MA4150, MA4120  	SVD1B4B42 
MA167, SVD1SS119−04 SVD1SR35200  	LN251RCP  	LN81CPH  	

■ CIRCUIT BOARDS AND WIRING CONNECTION DIAGRAM



y only

AC OUTLET (UNSWITCHED)

AC 120V (60 Hz)

White line for (MC)

BLU

ORN

BLK

RED

RED

ORN

POWER

(S4)

T1001 POWER TRANSFORMER

BRN

BRN

BLU

BLU

RED

BLK

RED

ORN

BLU

GROUND POINT

For F.R. Germany only

C SPECTRUM ANALYZER BAND PASS FILTERS

IC506 IC504 IC503 IC502

Q506 Q502 Q504 Q508 Q505 Q507 Q503 Q509 Q510

D SPECTRUM ANALIZER DISPLAY (FL)

IC508 IC507

Q518 Q520 Q522 Q524 Q528 Q529 Q516 Q526 Q527 Q521 Q515 Q519 Q523 Q525 Q530 Q514 Q517 Q513 Q511 Q512

(Power indicator)

E BAND LEVEL VOLUME

SUPK 865A (H) MADE IN JAPAN Technics

+12dB

-12dB

VR14 16kHz VR12 6.3kHz VR10 2.5kHz VR8 1kHz VR6 400Hz VR4 160Hz VR2 63Hz

VR13 16kHz VR11 6.3kHz VR9 2.5kHz VR7 1kHz VR5 400Hz VR3 160Hz VR1 63Hz

D114 D112 D110 D108 D106 D104 D102 D113 D111 D109 D107 D105 D103 D101

BAND LEVEL CONTROL (R CH)

BAND LEVEL CONTROL (L CH)

■ BLOCK DIAGRAM

Q501 ~ Q508 SAMPLING GATE

Q511~Q518 Inverter

Control signal of grid

0.7ms

4.8ms

+12V

-27V

G1

G2

8 channel switching pulse

Signal Det.

Buffer Q509

SPECTRUM ANALYZER BAND PASS FILTERS

IC503 (160Hz, 2.5KHz)
IC504 (63Hz, 400Hz)
IC505 (1KHz, 16KHz)
IC506 (6.3KHz)

BPF

Q510 Muting

FL (Display)

30dB

0dB

Full range

16K 6.3K 2.5K 1K 400 160 63

G1 ~ G8 : Grid No.

S1 ~ S12 : Segment No.

IC507 M54832AP CHANNEL SELECTOR

Comparator

OSC

Up scan

Down scan

D508 Signal Det. DC

Full range band level amplifier IC502 (2/2)

IC502 SVITA75559S LEVEL AMP

Level amplifier IC502 (1/2)

IC508 SVIHAI2010 FL SEGMENT DRIVER

Q519 ~ Q530 Buffer

Control signal of segment

Segment lighting

Segment put out light

+9.5V

-27V

AC Line

FL (Filament)

Power transformer

D512

D5

D9

D3 Rectifier

IC501 Regulator

IC501 AN78N12 12V REGULATOR

D510

D509

Q101~Q113 BPF

BAND PASS FILTER/LEVEL CONTROL

VR1 ~ VR13 63Hz~16KHz

-12 dB

+12 dB

IC1 (2/2) Control amplifier

IC1 SVITA75559S CONTROL AMP/BUFF

Buffer IC1 (1/2)

Q5 Muting

(EQ) S3-5 on off

D514 Power ind.

D101 ~ D113 Level volume knob ind.

S3-1 on off

S3-3 on off

(REC MODE) S1-1 EQ straight

S2-1 source tape

TAPE MONITOR S2-3 source tape

Q2 Reference voltage

Q1 Reference voltage

Muting

LINE OUT

REC OUT

LINE IN

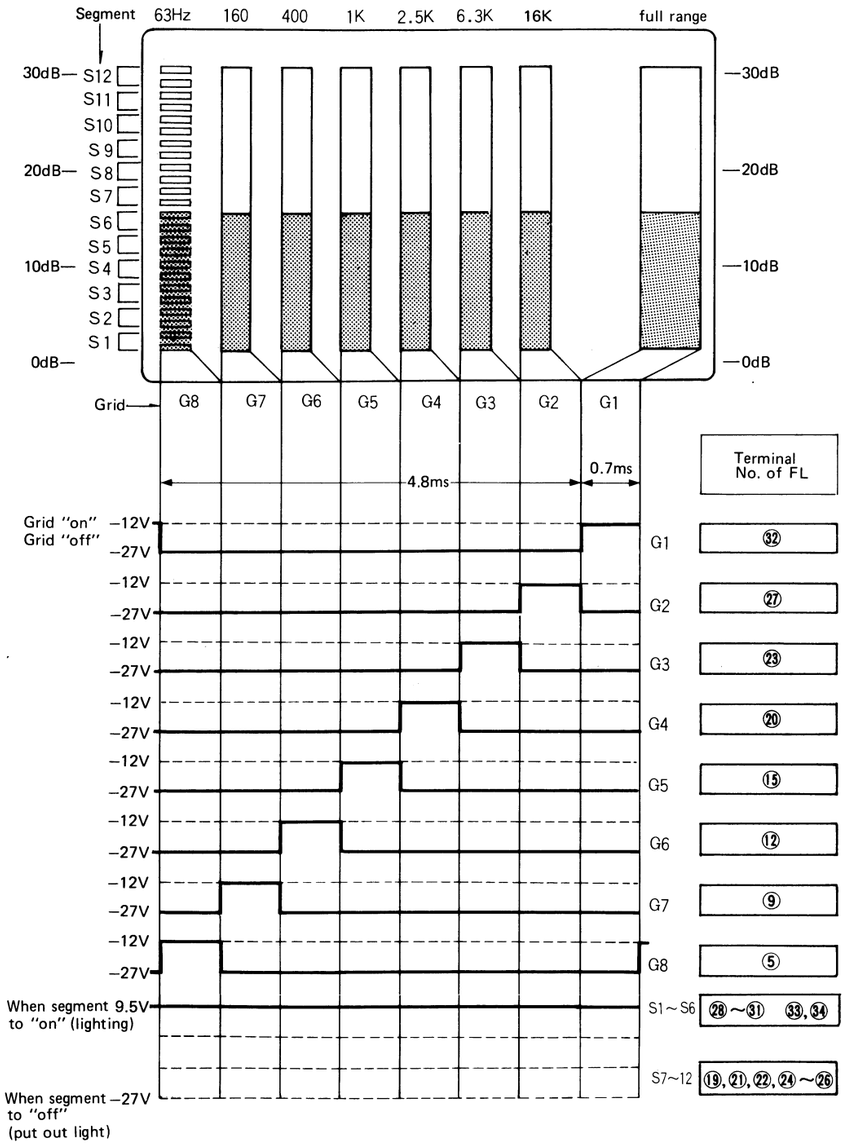
PLAYBACK

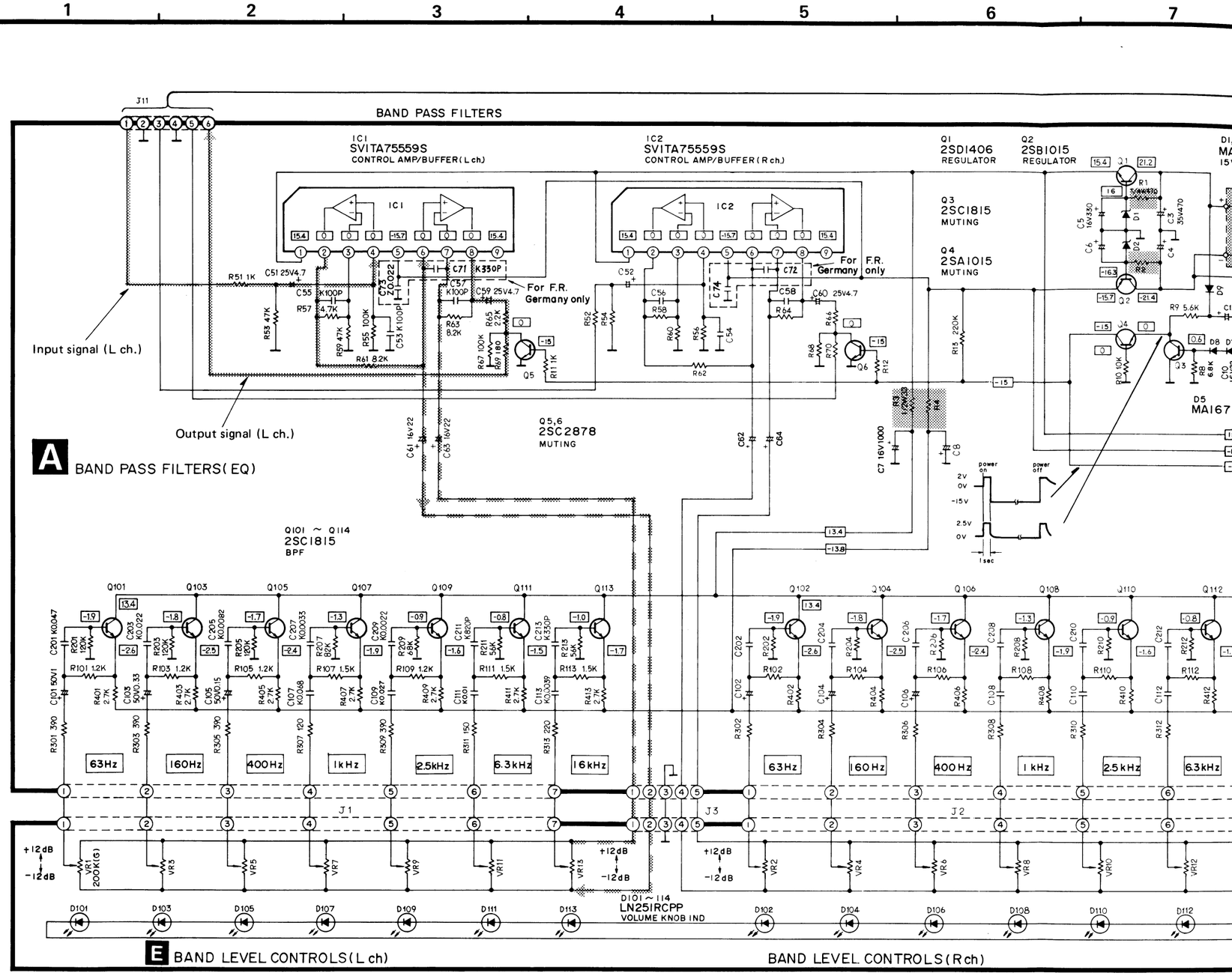
■ SCHEMATIC DIAGRAM

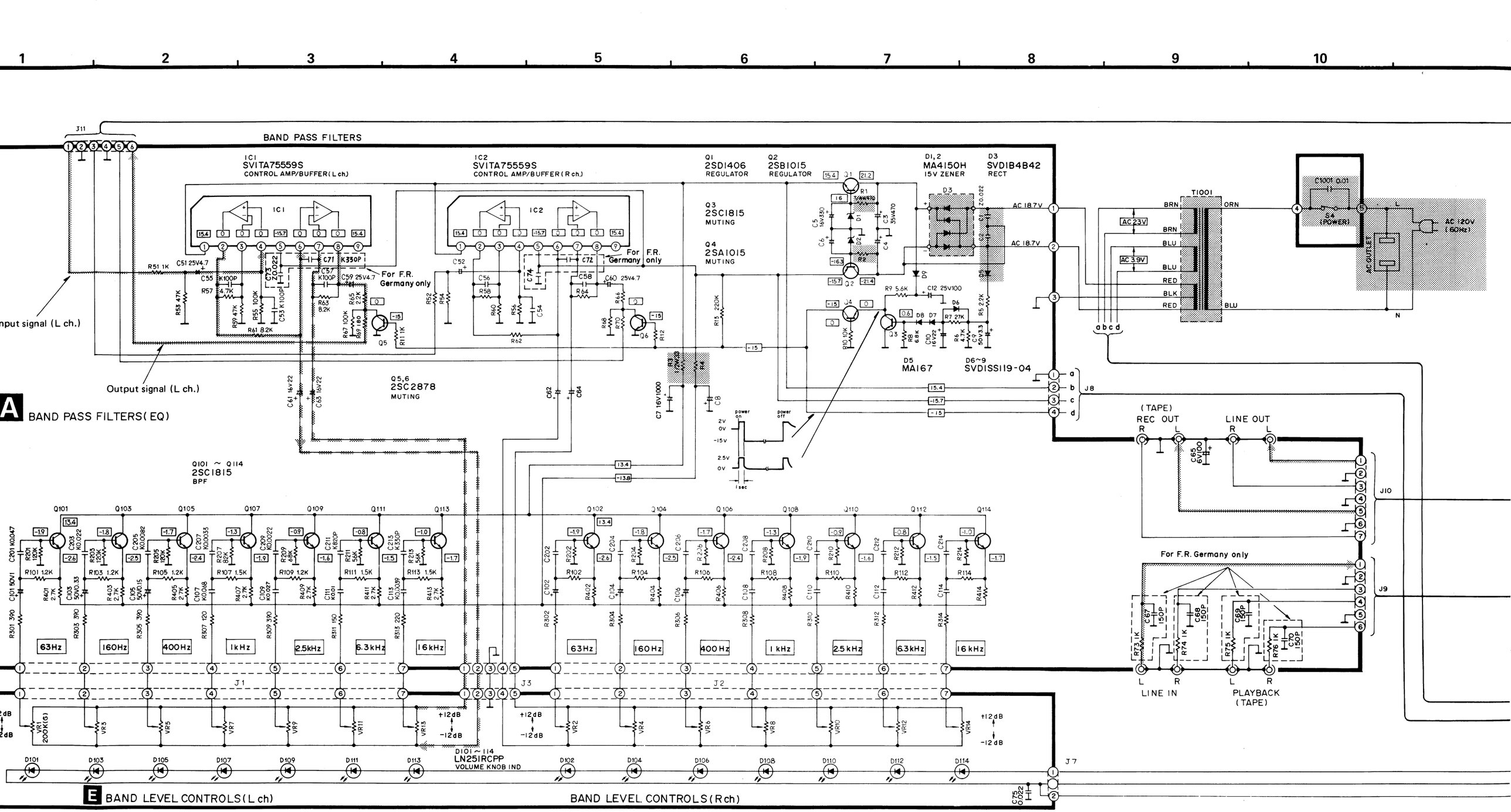
(This schematic diagram may be modified at any time with the development of new technology.)

- **Spectrum analyzer (Frequency level display) & terminal voltage of grid and segment**

Example

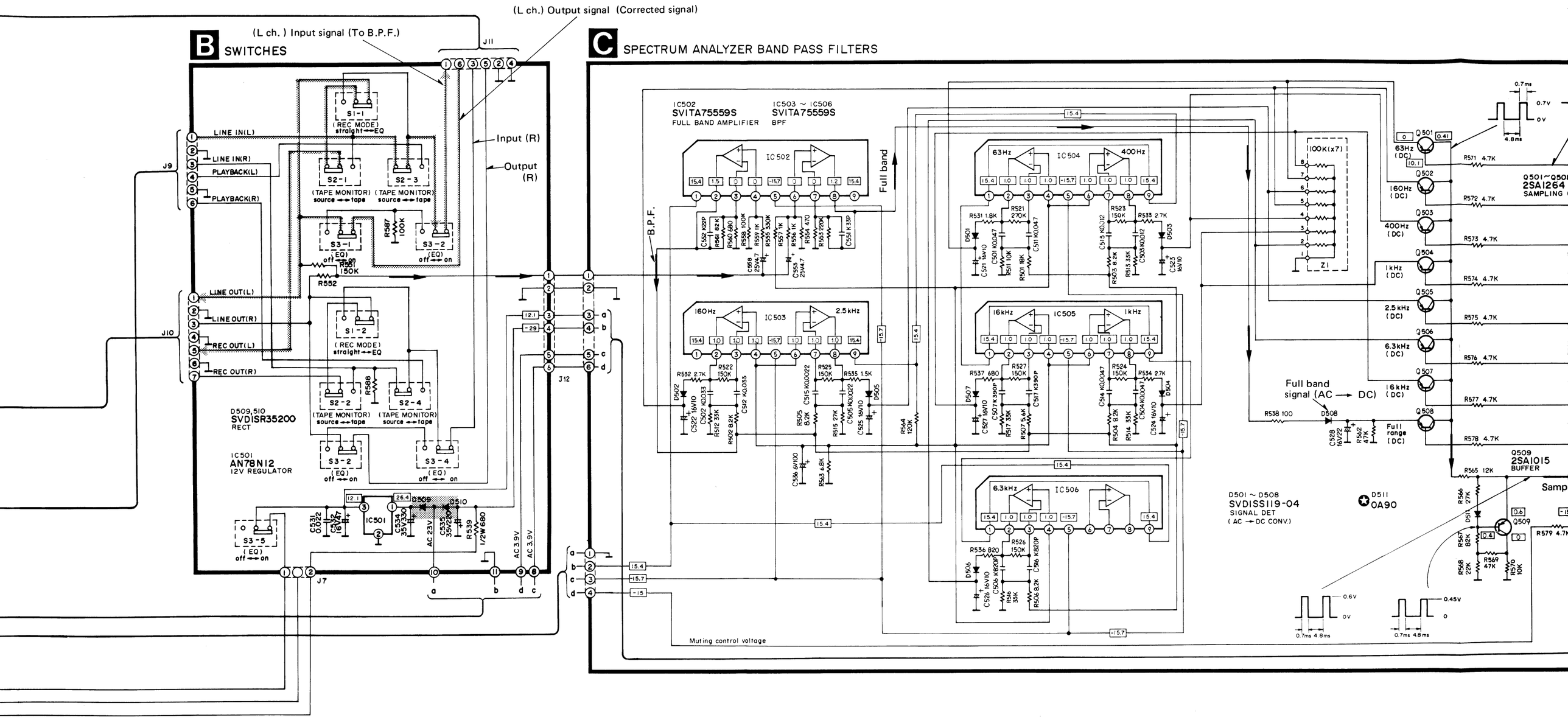






IMPORTANT SAFETY NOTICE

The shaded area on this schematic diagram incorporates special features important for protection from fire and electrical shock hazards.
When servicing, it is essential that only manufacturer's specified parts be used for the critical components in the shaded areas of the schematic.



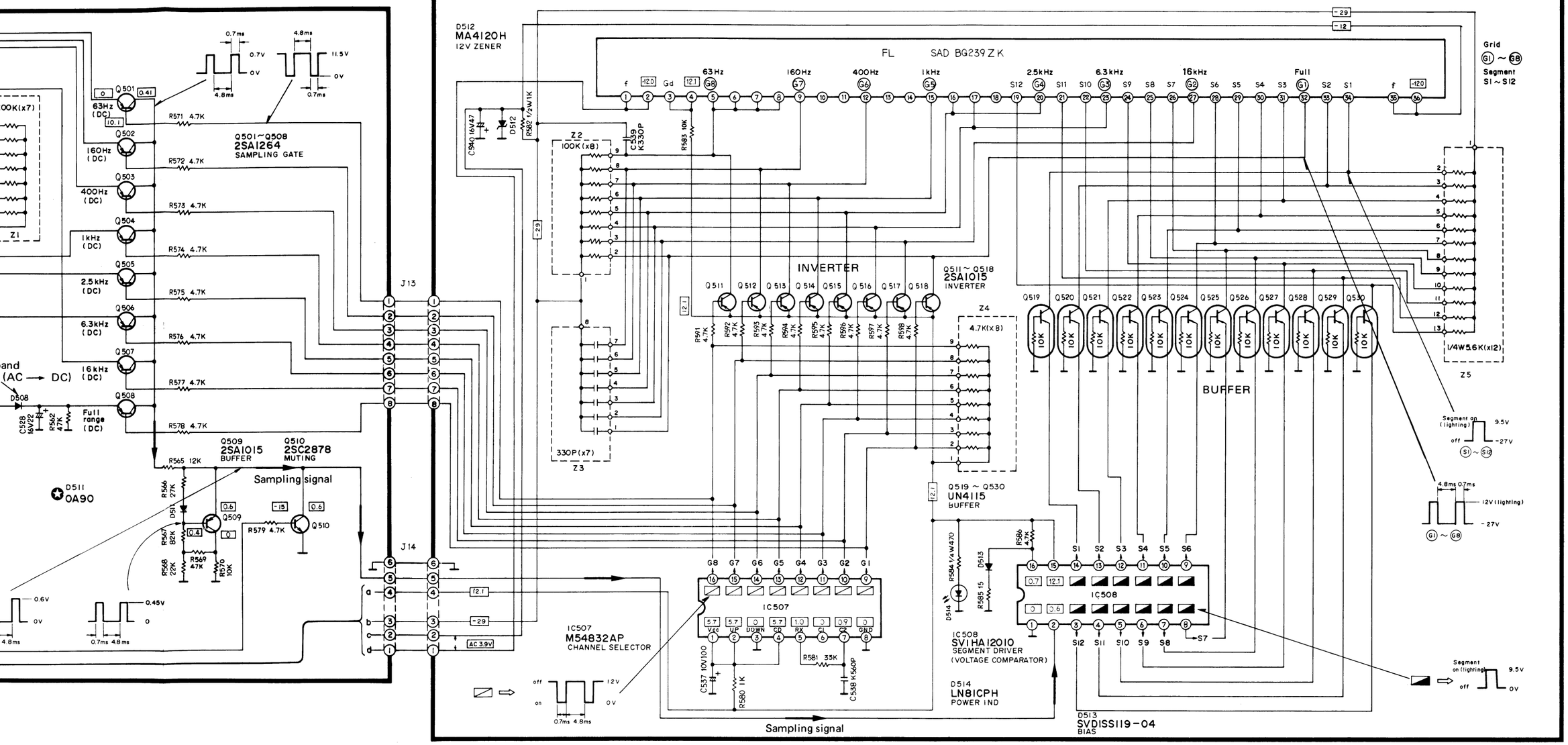
Notes:

1. **S1-1 ~ S1-2:** Recording mode selector in **"EQ"** position. straight ↔ EQ
2. **S2-1 ~ S2-4:** Tape-monitor selector in **"source"** position. source ↔ tape
3. **S3-1 ~ S3-5:** Equalization switch in **"on"** position. on ↔ off
4. **S4:** Power source switch in **"on"** position. on ↔ off
5. ▭ Indicated voltage values are standard values for the unit measured by the DC electronic circuit tester (high impedance) with the chassis taken standard.
6. ——— Positive and Negative voltage supply line.
7. ⋯⋯ Signal line (Left channel)
8. The part No. of transistors, IC and diodes mentioned in the schematic diagram stand for production part No. Regarding the part No. with ✪ mark, the production part No. are different from the replacement part No. Therefore, when placing an order for replacement part, please use the part No. in the replacement part list.

19 20 21 22 23 24 25 26 27 28

A B C D E F

D SPECTRUM ANALYZER DISPLAY



■ RESISTORS & CAPACITORS

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts orders.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components use only manufacturer's specified parts.
3. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
4. The "Ⓢ" mark is service standard parts and may differ from production parts.
5. The unit of resistance is OHM (Ω). K = 1000Ω, M = 1000KΩ
6. The unit of capacitance is MICROFARAD (μF). P = 10^{-6}μF

Numbering System of Resistor

Example

ERD	25	F	J	101
Type	Wattage	Shape	Tolerance	Value

Resistor Type	Wattage	Tolerance
ERD : Carbon	25 : 1/4W 10 : 1/8W 50 : 1/2W S1 : 1/4W	J : ±5%

Numbering System of Capacitor

Example

ECKD	1H	102	Z	F
Type	Voltage	Value	Tolerance	Peculiarity

ECEA	50	M	R47	R
Type	Voltage	Peculiarity use	Value	Special use

Capacitor Type	Voltage		Tolerance
	ECEA Type	Other	
ECEA : Electrolytic ECCD : Ceramic ECKD : Ceramic ECF : Semi Conductor	0J : 6.3V 1A : 10V 1C : 16V 1E : 25V 1V : 35V 1H : 50V 50 : 50V	1H : 50V DC KC : 125V AC	K : ±10% Z : +80%, –20% P : +100%, –0%

● RESISTORS

Ref. No.	Part No.	Value
R1,2 Ⓢ⚠	ERD25FJ471	470
R3,4 ⚠	ERD50FJ330	33
R5	ERD10TJ222	2.2K
R6	ERD10TJ472	4.7K
R7	ERD10TJ273	27K
R8	ERD10TJ682	6.8K
R9	ERD10TJ562	5.6K
R10	ERD10TJ103	10K
R11,12	ERD10TJ102	1K
R13	ERD10TJ224	220K
R51,52	ERD10TJ102	1K
R53,54	ERD10TJ473	47K
R55,56	ERD10TJ104	100K
R57,58	ERD10TJ472	4.7K
R59,60	ERD10TJ473	47K
R61,62	ERD10TJ822	8.2K
R63,64	ERD10TJ822	8.2K
R65,66	ERD10TJ222	2.2K
R67,68	ERD10TJ104	100K
R69,70	ERD10TJ181	180
R101,102	ERD10TJ122	1.2K
R103,104	ERD10TJ122	1.2K
R105,106	ERD10TJ122	1.2K
R107,108	ERD10TJ152	1.5K
R109,110	ERD10TJ122	1.2K
R111,112	ERD10TJ152	1.5K
R113,114	ERD10TJ152	1.5K

Ref. No.	Part No.	Value
R201,202	ERD10TJ124	120K
R203,204	ERD10TJ124	120K
R205,206	ERD10TJ124	120K
R207,208	ERD10TJ823	82K
R209,210	ERD10TJ683	68K
R211,212	ERD10TJ563	56K
R213,214	ERD10TJ563	56K
R301,302	ERD10TJ391	390
R303,304	ERD10TJ391	390
R305,306	ERD10TJ391	390
R307,308	ERD10TJ121	120
R309,310	ERD10TJ391	390
R311,312	ERD10TJ151	150
R313,314	ERD10TJ221	220
R401,402	ERD10TJ272	2.7K
R403,404	ERD10TJ272	2.7K
R405,406	ERD10TJ272	2.7K
R407,408	ERD10TJ272	2.7K
R409,410	ERD10TJ272	2.7K
R411,412	ERD10TJ272	2.7K
R413,414	ERD10TJ272	2.7K
R501	ERD10TJ183	18K
R502,503	ERD10TJ822	8.2K
R504,505	ERD10TJ822	8.2K
R506	ERD10TJ822	8.2K
R507	ERD10TJ562	5.6K
R511	ERD10TJ103	10K

Ref. No.	Part No.	Value
R512,513	ERD10TJ333	33K
R514	ERD10TJ333	33K
R515	ERD10TJ273	27K
R516,517	ERD10TJ333	33K
R521	ERD10TJ274	270K
R522,523	ERD10TJ154	150K
R524,525	ERD10TJ154	150K
R526,527	ERD10TJ154	150K
R531	ERD10TJ182	1.8K
R532,533	ERD10TJ272	2.7K
R534	ERD10TJ272	2.7K
R535	ERD10TJ152	1.5K
R536	ERD10TJ821	820
R537	ERD10TJ681	680
R538	ERD10TJ101	100
R551,552	ERD10TJ154	150K
R553	ERD10TJ224	220K
R554	ERD10TJ471	470
R555	ERD10TJ334	330K
R556,557	ERD10TJ102	1K
R558	ERD10TJ104	100K
R559	ERD10TJ102	1K
R560	ERD10TJ681	680
R561	ERD10TJ154	150K
R562	ERD10TJ473	47K
R563	ERD10TJ682	6.8K
R564	ERD10TJ124	120K

Ref. No.	Part No.	Value
R565	ERD10TJ123	12K
R566	ERD10TJ273	27K
R567	ERD10TJ823	82K
R568	ERD10TJ223	22K
R569	ERD10TJ473	47K
R570	ERD10TJ103	10K
R571,572	ERD10TJ472	4.7K
R573,574	ERD10TJ472	4.7K
R575,576	ERD10TJ472	4.7K
R577,578	ERD10TJ472	4.7K
R579	ERD10TJ472	4.7K
R580	ERD10TJ471	470
R581	ERD10TJ333	33K
R582	ERDS1FJ102	1K
R583	ERD10TJ103	10K
R584 Ⓢ	ERD25FJ471	470
R585	ERD10TJ150	15
R586	ERD10TJ472	4.7K
R587,588	ERD10TJ104	100K
R589	ERDS1TJ681	680
R591,592	ERD10TJ472	4.7K
R593,594	ERD10TJ472	4.7K
R595,596	ERD10TJ472	4.7K
R597,598	ERD10TJ472	4.7K

● CAPACITORS

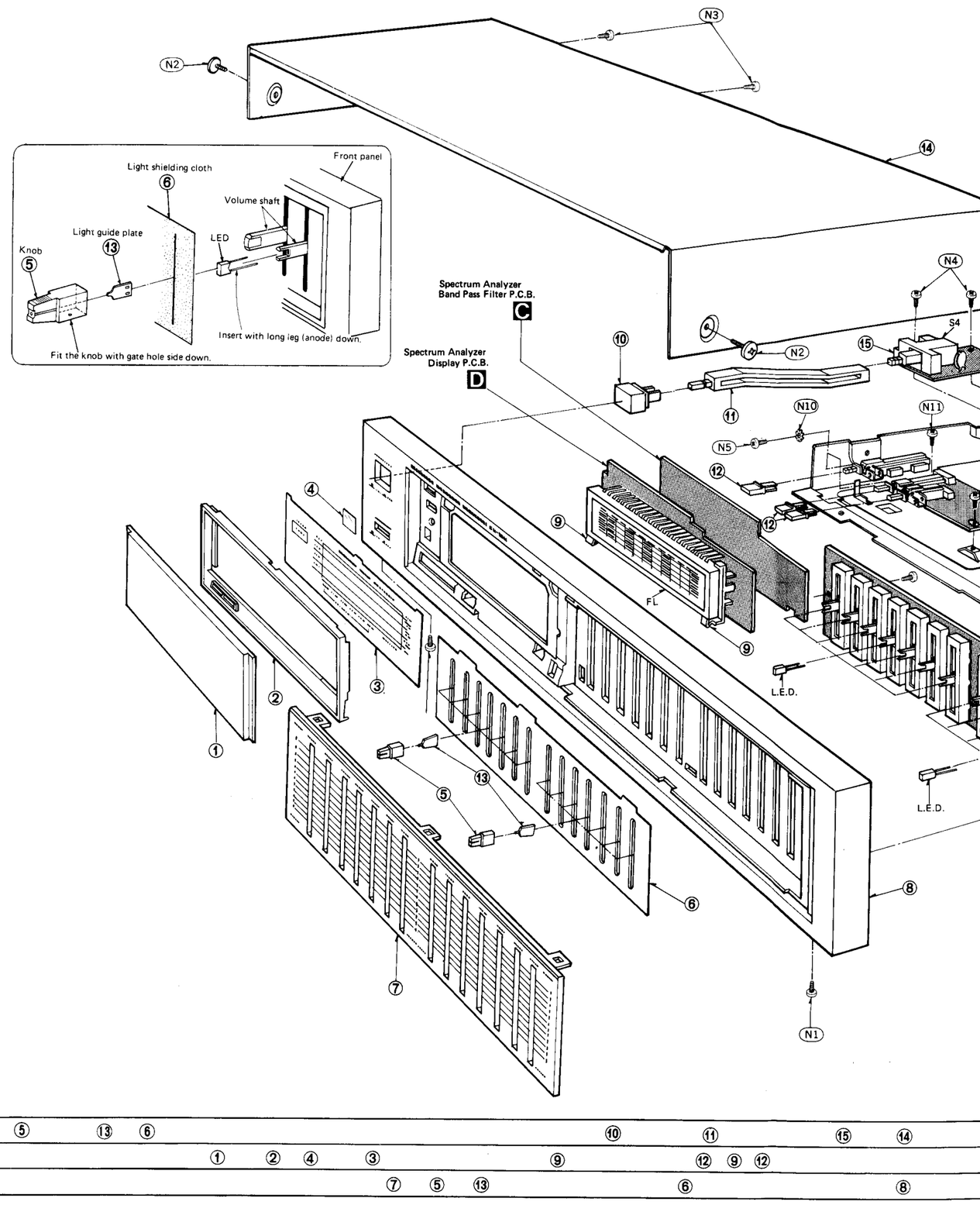
Ref. No.	Part No.	Value
C1,2 Ⓢ⚠	ECKD1H223ZF	0.022
C3,4	ECEA1VU471	470
C5,6	ECEA1CU331	330
C7,8	ECEA1CU102	1000
C9 Ⓢ	ECEA50Z3R3	3.3
C10	ECEA1CU220	22
C12	ECEA1EU101	100
C51,52	ECEA1EU4R7	4.7
C53,54 Ⓢ	ECCD1H101K	100P
C55,56 Ⓢ	ECCD1H101K	100P
C57,58 Ⓢ	ECCD1H101K	100P
C59,60	ECEA1EU4R7	4.7
C61,62	ECEA1CU220	22
C63,64	ECEA1CU220	22
C65	ECEA0JU101	100
C75 Ⓢ	ECKD1H223ZF	0.022

Ref. No.	Part No.	Value
C101,102 Ⓢ	ECEA50Z1	1
C103,104	ECEA1HSR33	0.33
C105,106	ECEA1HSR15	0.15
C107,108	ECFTD683KXL	0.068
C109,110	ECFTD273KXL	0.027
C111,112	ECFTD103KXL	0.01
C113,114	ECFTD392KXL	0.0039
C201,202	ECFTD473KXL	0.047
C203,204	ECFTD223KXL	0.022
C205,206	ECFTD822KXL	0.0082
C207,208	ECFTD332KXL	0.0033
C209,210	ECFTD222KXL	0.0022
C211,212 Ⓢ	ECKD1H821KB	820P
C213,214 Ⓢ	ECKD1H331KB	330P
C501	ECFTD473KXL	0.047
C502	ECFTD333KXL	0.033

Ref. No.	Part No.	Value
C503	ECFTD123KXL	0.012
C504	ECFTD472JXL	0.0047
C505	ECFTD222KXL	0.0022
C506 Ⓢ	ECKD1H821KB	820P
C507 Ⓢ	ECKD1H391KB	390P
C511	ECFTD473KXL	0.047
C512	ECFTD333KXL	0.033
C513	ECFTD123KXL	0.012
C514	ECFTD472JXL	0.0047
C515	ECFTD222KXL	0.0022
C516 Ⓢ	ECKD1H821KB	820P
C517 Ⓢ	ECKD1H391KB	390P
C521,522	ECEA1CU100	10
C523,524	ECEA1CU100	10
C525,526	ECEA1CU100	10
C527	ECEA1CU100	10

Ref. No.	Part No.	Value
C528	ECEA1CU220	22
C531 Ⓢ	ECKD1H223ZF	0.022
C532	ECEA1CU470	47
C534	ECEA1VU331	330
C535	ECEA1VU221	220
C536	ECEA0JU101	100
C537	ECEA1AK101	100
C538 Ⓢ	ECKD1H561KB	560P
C539 Ⓢ	ECKD1H331KB	330P
C540	ECEA1CU470	47
C551 Ⓢ	ECCD1H330K	33P
C552 Ⓢ	ECCD1H220K	22P
C553,554	ECEA1EU4R7	4.7
C1001 ⚠	ECKDKC103PF2	0.01

■ EXPLODED VIEWS



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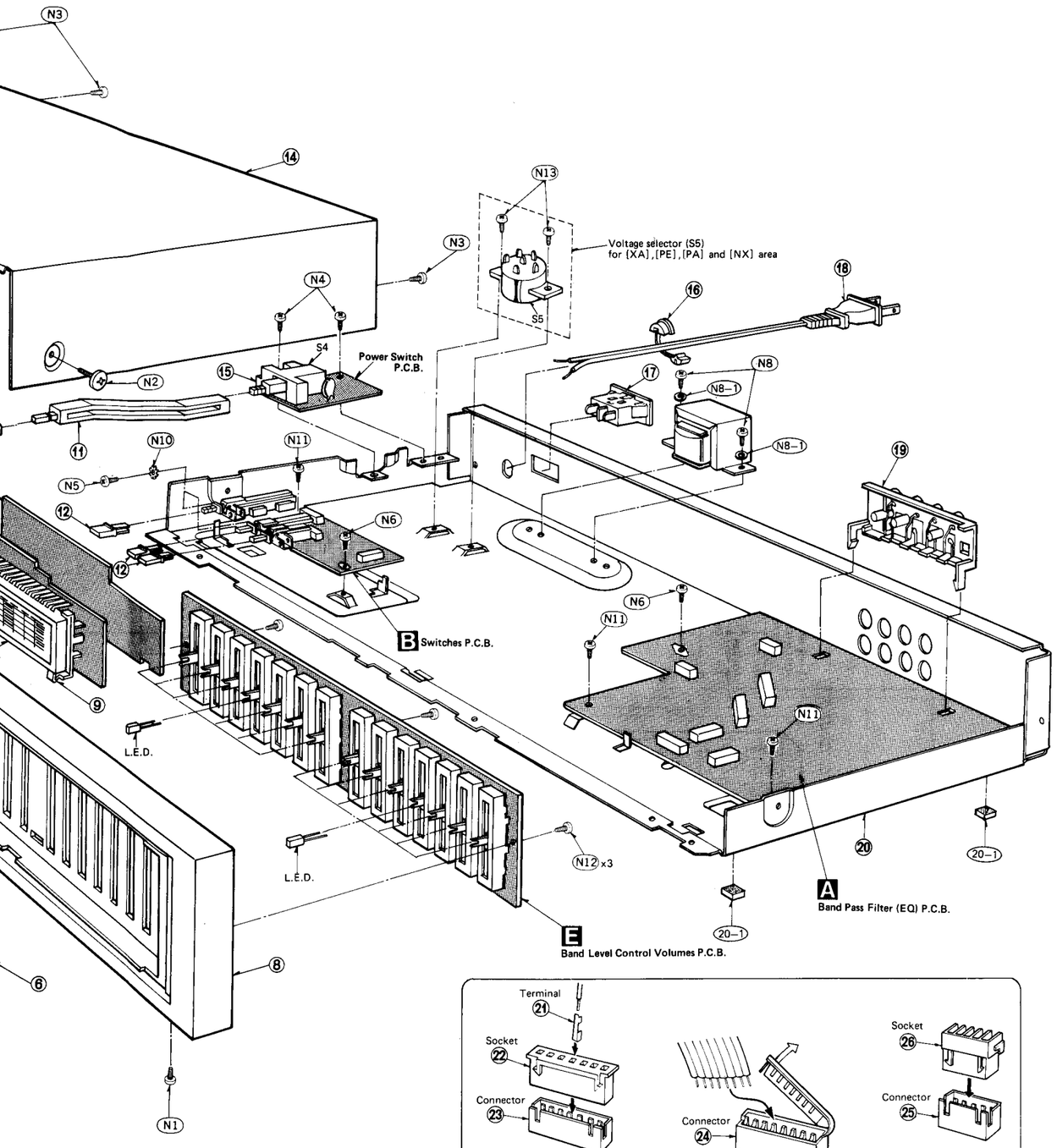

■ REPLACEMENT PARTS LIST

Notes:
1. Part numbers are indicated on most mechanical parts. Please use this part number for parts order.
2. Important safety notice: Components identified by ⚠ mark have special characteristics important for safety. When replacing any of these components, use only manufacturer's specified parts.
3. The Ⓢ mark is service standard parts and may differ from production parts.
4. The parenthesized numbers in the column of description stand for the quantity per set.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.
6. ○–marked parts are used for silver type only. Ⓚ–marked parts are used for black type only.
7. Part other than ○ and Ⓚ–marked are used for both black and silver types.

Ref. No.	Part No.	Part Name & Description
INTEGRATED CIRCUITS		
IC1,2,502~506	SVITA75559S	Control Amp., Buffer & Spectrum Analyzer B.P.F.
IC501	AN78N12	12V Regulator
IC507	M54832AP	Channel Selector
IC508	SVIHA12010	FL Driver
TRANSISTORS		
Q1	2SD1406–Y	Regulator
Q2	2SB1015–Y	Regulator
Q3	2SC1815G	Muting
Q4,509,511~518	2SA1015Y	Muting, Buffer & Inverter
Q5,6,510	2SC2878A–T	Muting
Q501~508	2SA1246T–A	Sampling Gate
Q519~530	UN4115	Buffer

Ref. No.	Part No.	Part Name & Description
DIODES		
D1,2	MA4150H	15V Zener
D3 ⚠	SVD1B4B42	Rectifier
D5	MA167	Rectifier
D6~9,501~508 513	SVD1SS119–04	Switching & Detector
D101~114	LN251RCPP	LED, Volume
D509,510 ⚠	SVD1SR35200	Rectifier
D511 Ⓢ	20A90	Bias
D512	MA4120H	12V Zener
D514	LN81CPH	LED, Power
VARIABLE RESISTORS		
VR1~14	EVAJN3J15G25	Band Level Control, 200kΩ(G)
FLUORESCENT DISPLAY TUBE		
FL	SADBG239ZK	Display

Ref. No.	Part No.	Part Name & Description
COMPONENT COMBINATIONS		
Z1	RGSD7X104K	100kΩ(×7)
Z2	RGSD8X104K	100kΩ(×8)
Z3	PJB7XC331M	330pF(×7)
Z4	RGSD8X472X	4.7kΩ(×8)
Z5	RGHD12X562K	1/4W, 5.6kΩ(×12)
SWITCHES		
S1,2	SSHK47	Rec mode, Tape Monitor
S3	SSHK46	Equalization
S4 ⚠	SSH1071	Power source
TRANSFORMER		
T1001 ⚠	SLTK5J24–W	Power Transformer

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
1 ○	SGU419–3	Transparent Plate (1)
1 Ⓚ	SGU419–1	Transparent Plate (1)
2	SGXK92	Grille (1)
3	SDUK11	Filter (1)
4	SDUK12	Sheet, Front Panel (1)
5 ○	SBWK23	Button (14)
5 Ⓚ	SBWK22	Button (14)
6	SGXK94	Cloth, Shielding (1)
7 ○	SGXK91–2	Sub Panel (1)
7 Ⓚ	SGXK91	Sub Panel (1)
8 ○	SGWK280SA	Front Panel (1)
8 Ⓚ	SGWK280BA	Front Panel (1)
9	SHR9728	Holder, FL (2)
10	SBC666	Button, Power SW (1)
11	SUB81	Rod, Connection Power SW (1)
12	SBC315–4T	Button (3)
13	SBZK33	Guide, Light (14)
14 ○	SKCK130S	Cabinet (1)
14 Ⓚ	SKCK130BB	Cabinet (1)
15	SMNK17	Cover, Power SW (1)
16	RHR111	Bushing, AC Cord (1)

Ref. No.	Part No.	Part Name & Description
CABINET and CHASSIS PARTS		
17[M] ⚠	SJS9221–1	Socket, AC Outlet (1)
17[MC] ⚠	SJS9223	Socket, AC Outlet (1)
18[M] ⚠	RJA9YA–K	AC Cord, Power Source (1)
18[MC] ⚠	SJA169	AC Cord, Power Source (1)
19	SJF3055–1N	Terminal Board, In/Out (1)
20	SGPKH8044M	Rear Panel Ass'y (W/Feet) (1)
[20–1	[SHS2481	Foot (4)
21	SJT783	Terminal (14)
22	SJS5811	Socket (2)
23	SJT3809	Connector (2)
24	SJT5807	Connector (1)
25	SJT3319	Connector, J7 (1)
25	SJT3415	Connector, J8 (1)
25	SJT3511	Connector, J3 (1)
25	SJT3611	Connector, J11,12 (1)
25	SJT3709	Connector, J1,2,10 (3)
25	SJT3809	Connector,J9 (1)
26	SJS5339	Socket, J7 (1)
26	SJS5433	Socket, J8 (1)
26	SJS5531	Socket, J3 (1)
26	SJS5635	Socket, J11,12 (2)
26	SJS5719	Socket, J1,2,10 (3)

Ref. No.	Part No.	Part Name & Description
SCREWS and WASHERS		
N1 Ⓢ	XTB3+8BFZ	Tapping, ⊕3×8 (2)
N2 ○	SNE2095–4	Cabinet (2)
N2 Ⓚ	SNE2095–5	Cabinet (2)
N3 ○Ⓢ	XTB3+8BFN	Tapping, ⊕ 3x8 (3)
N3 ⓀⓈ	XTB3+8BFZ	Tapping, ⊕ 3x8 (3)
N4 Ⓢ	XTB3+8BFN	Tapping, ⊕3×8 (2)
N5 Ⓢ	XTB3+6BFN	Tapping, ⊕3×6 (2)
N6	XTBS3+8CFYR1	Tapping, ⊕3×8(W/Detent) (2)
N7 Ⓢ	XSN3+8S	Screw, ⊕3×8 (1)
N7–1 Ⓢ	XWA3B	Washer, Spring φ3 (1)
N7–2 Ⓢ	XWG3	Washer, φ3 (1)
N8 Ⓢ	XTN3+6B	Tapping, ⊕3×6 (2)
N8–1 Ⓢ	XWG3	Washer, φ3 (2)
N9 Ⓢ	XTB3+10BFZ	Tapping, ⊕3×10(2)
N10 Ⓢ	XWC3B	Stop Ring (2)
N11	XTB3+8BFYR	Tapping, ⊕ 3x8 (3)
N12	XTB3+8BFYR	Tapping, ⊕ 3x8 (3)
ACCESSORY		
A1	SJPK2201	Cord, Pin Pin (2)
PACKING PARTS		
P1[M] ○	SPGK137	Carton Box (1)
P1[M] Ⓚ	SPGK140	Carton Box (1)
P1[MC] Ⓚ	SPGK141	Carton Box (1)
P2	SPSK69	Pad, Front (1)
P3	SPSK70	Pad, Rear (1)
P4	SPSK74	Pad, Upper (1)
P5 ○	SPP719	Poyethylene Sheet (1)
P5 Ⓚ	SPP659	Poyethylene Sheet (1)
P6[M]	SQFK10071	Instruction Book (1)
P6[MC]	SQFK10072	Instruction Book (1)

[M] only
*** SD-7170E(SC-7170E)**
SU-Z800, ST-Z400, RS-B50
SL-QL5, SH-8044
Outer Carton Box SPG5056
Spacer SPS4497

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